pre-operatively and within 24 hours after carotid revascularization. Venous blood samples to assess serum levels of neuron-specific enolase (NSE) and S100β protein were collected for each patient pre-operatively and at five time points in a 24-hour post-operative period, and then assayed using automated commercial equipment. Relationship between serum markers levels and neuropsychometric and imaging tests and differences between the two groups of patients were analyzed by chi-square test with significance at $p<0.05$.

Results: No TIA or strokes were clinically observed in the two groups. CAS caused more new subcortical lesions at post-operative DW-MRI ($p=0.04$) and a significant decline in MMSE post-operative score ($p=0.045$) compared to CEA. In CAS patients new lesions at DW-MRI were significantly associated with MMSE score decline greater than 5 points ($p=0.03$). Analysis of S100β and NSE levels showed a significant increase at 24 hours in CAS group compared to the CEA group ($p=0.035$).

Conclusions: Biochemical markers measurements of brain damage combined with neuropsychometric tests and DW-MRI can be used to evaluate silent post-CAS injuries. In CAS the mechanisms of rise in S-100β and NSE levels at 24 hours may be due to increased peri-operative micro-embolisation rather than to hypoperfusion. Further studies are required to assess the clinical significance and cost effectiveness of those tests in carotid revascularization.

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S7: SVS Plenary Session

SS36.

Genetic and Environmental Contributions to Abdominal Aortic Aneurysm Development in a Twin Population

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Objectives: The contribution of hereditary and environmental factors to development of abdominal aortic aneurysms (AAA) is still unclear. The aim of this study was to analyze the role of these factors in a large population-based sample of twins.

Methods: The Swedish Twin Registry, containing data on twins born in the country since 1895, was cross-linked with the Inpatient Registry, providing national coverage of discharge diagnoses coded according to the *International Classification of Diseases* (ICD). All twins with an infrarenal AAA were identified. Concordance rates and tetrachoric correlations were calculated for monozygotic (MZ) and dizygotic (DZ) twins. Tetrachoric correlations were calculated for two normally distributed phenotypic variables that are both expressed as a dichotomy and reflect the similarity of twin pairs. Higher concordance rates and correlations of liability in MZ twins than in DZ twins suggest that genetic factors influence disease development. Structural equation modelling techniques, *Mx*-analyses, were used to estimate the contributions of genetic effects as well as shared and non-shared environmental factors for development of AAA.

Results: There were 172890 twins registered at the time of the study including 266 twins (81% men; mean age 72 years, range 48-94) with AAA. There were 7 MZ and 5 DZ concordant pairs as wells 44 MZ and 197 DZ discordant pairs with AAA. The probandwise concordance rates for MZ and DZ pairs were 24% and 4.8%, respectively. The tetrachoric correlations were 0.71 in MZ pairs and 0.31 in DZ pairs. In the structural equation models, genetic effects accounted for 70% (95% CI: 0.33-0.83), shared environmental effects for 0% (95% CI: 0-0.27), and non-shared environmental effects for 30% (95% CI: 0.17-0.46) of the phenotypic variance among twins.

Conclusions: In the largest AAA twin study to date, we could provide robust epidemiological evidence that heritability contributes to aneurysm formation. Concordances and correlations were higher in MZ compared with DZ twins, indicating genetic effects. A heritability of 70% of the total trait variance was estimated. The remaining variance was explained by non-shared environmental factors with no support for a role of shared environmental influences.

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SS37.

Open Surgical Repair of Pararenal Abdominal Aortic Aneurysms: Long-Term Outcomes of Renal Function

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Objective: Pararenal abdominal aortic aneurysms (PAAAs) are increasingly being repaired with endovascular techniques. In order to assess long-term outcomes, particularly renal function, future endovascular repairs must be compared to an open repair gold standard presented in this report.

Methods: Between 1993 and 2003, 3058 abdominal aortic aneurysms were repaired including 257 PAAAs, of which 252 had long-term follow-up, and 229 had long-term glomerular filtration rate (GFR) assessment. Patients with an estimated GFR <60 mL/min/1.73m^2 were considered to have renal dysfunction at the time of surgery. Patients with a $>$ 30% decrease in GFR were considered to have a significant decline in renal function following surgery. Overall survival and survival free of a significant decline in renal function were estimated using the Kaplan-Meier method.

Results: There were 205 men (81%) and 47 women (19%); 130 (52%) had preoperative renal dysfunction with 19 (8%) on dialysis before surgery. Of the 252 patients, 131 died at a median of 4.2 years following surgery (range 0 days to 14.0 years). Median duration of follow-up was 3.3 years (range 3 days to 14.1 years). Estimated overall survival rates at 1, 3, 5, 7, and 10 years following surgery were 92%, 76%, 61%, 43%, and 23%, respectively. There was no difference in survival between patients with and without preoperative renal dysfunction ($p=0.3$). Significant decline in renal function occurred in 32 of 229 (14%) at a median of 2.9 years post-operatively. Estimated survival free of a significant decline in renal function rates at 1, 3, 5, 7, and 10 years following surgery were 93%, 89%, 83%, 75%, and 54%, respectively. Decline in renal function was associated with ($p<0.01$) increased mesenteric ischemia time, supravisceral clamping and renal artery bypass, but not preoperative renal dysfunction ($p=0.6$) or dialysis requirement ($p=0.3$).

Conclusion: Long-term decline in renal function may affect up to 14% of patients undergoing open PAAA repair, but does not affect long-term survival. Patients at risk for post-operative renal dysfunction such as those with PAAA requiring supravisceral clamping or renal artery bypass may be better managed with endovascular repair depending on the future long-term results of branched or fenestrated endografts.

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